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Voronoi-based trajectory optimization for UGV path planning

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Abstract

 Optimal path planning in dynamic environments for an unmanned vehicle is a complex task of mobile robotics that requires an integrated approach. This paper describes a path planning algorithm, which allows to build a preliminary motion trajectory using global information about environment, and then dynamically adjust the path in real-time by varying objective function weights. We introduce a set of key parameters for path optimization and the algorithm implementation in MATLAB. The developed algorithm is suitable for fast and robust trajectory tuning to a dynamically changing environment and is capable to provide efficient planning for mobile robots.

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Keywords

optimization criteria, path planning, Unmanned Ground Vehicle (UGV), voronoi diagram

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